

Mathematics	Group-I	PAPER: I
Time: 30 Minutes	(OBJECTIVE TYPE)	Marks: 20

Note: Four possible answers A, B, C and D to each question are given. The choice which you think is correct, fill that circle in front of that question with Marker or Pen ink in the answer-book. Cutting or filling two or more circles will result in zero mark in that question.

1-1- $3 \sin \alpha - 4 \sin^3 \alpha = :$

- (a) $\sin \alpha$
- (b) $\sin 2\alpha$
- (c) $\sin 3\alpha$ ✓
- (d) $\sin 4\alpha$

2- Number of signals can be made with 4 flags when one flag is used at a time are:

- (a) 4C_0
- (b) 4C_1
- (c) 4C_2
- (d) 4C_4 ✓

3- Domain of the function $y = \sin^{-1} x$ is:

- (a) $-\frac{\pi}{2} \leq x \leq \frac{\pi}{2}$
- (b) $-1 \leq y \leq 1$
- (c) $-1 \leq x \leq 1$ ✓
- (d) $-\frac{\pi}{2} \leq y \leq \frac{\pi}{2}$

4- If $l = 35 \text{ cm}$ and $\theta = 1 \text{ rad}$, then $r = :$

- (a) 35°
- (b) 35 cm ✓
- (c) 35 rad
- (d) 35 m

5- The equation $\sin^2 x - \sec x = \frac{3}{4}$ is called:

- (a) Trigonometric equation ✓
- (b) Linear equation
- (c) Quadratic equation
- (d) Quartic equation

6- Francesco Moulolico devised the method of:

- (a) Partial fraction
- (b) Induction ✓
- (c) Logarithms
- (d) Binomial

7- In any ΔABC with usual notations, $\frac{\Delta}{s-c} = :$

(a) r (b) r_1
(c) r_2 (d) $r_3 \checkmark$

8- Period of $\cot \theta$ is:

(a) $\pi \checkmark$ (b) 2π
(c) $\frac{\pi}{2}$ (d) $\frac{3\pi}{2}$

9- The general term in the expansion of $(a+x)^n$ is:

(a) $\binom{n}{a} a^{n-r} x^r$ (b) $\binom{n}{x} a^{n-r} x^r$
(c) $\binom{n}{r} a^{n-r} x^r \checkmark$ (d) $\binom{n}{r} a^{n-r} x$

10- If sides of a ΔABC are $a = 4584$, $b = 5140$ and $c = 3624$, then greatest angle will be:

(a) α (b) $\beta \checkmark$
(c) γ (d) a

11- If $x - a$ is a factor of polynomial $f(x)$, then $f(a)$ is:

(a) $= 0 \checkmark$ (b) < 0
(c) > 0 (d) $\neq 0$

12- The multiplicative inverse of $(1, -2) = :$

(a) $\left(\frac{1}{5}, \frac{-2}{5}\right)$ (b) $\left(\frac{-1}{5}, \frac{-2}{5}\right)$
(c) $\left(\frac{1}{5}, \frac{2}{5}\right) \checkmark$ (d) $\left(\frac{-1}{5}, \frac{2}{5}\right)$

13- If ${}^n C_5 = {}^n C_4$, then n is :

(a) 9 \checkmark (b) 7
(c) 6 (d) 5

14- If $\begin{bmatrix} x-3 & 1 \\ -5 & -4 \end{bmatrix} = \begin{bmatrix} 2 & 1 \\ -5 & -4 \end{bmatrix}$, then $x = :$

(a) 5 \checkmark (b) -5
(c) -1 (d) 1

15- The arithmetic mean between $\sqrt{2}$ and $3\sqrt{2}$ is:

(a) $3\sqrt{2}$ (b) $2\sqrt{2} \checkmark$
(c) $4\sqrt{2}$ (d) $\sqrt{2}$

16- The sum of four 4th roots of 16 is:

(a) 0 ✓ (b) 2
(c) 4 (d) 16

17- 9th term in the sequence $\frac{1}{3}, \frac{1}{5}, \frac{1}{7}, \dots$ is:

(a) $\frac{1}{13}$ (b) $\frac{1}{15}$
(c) $\frac{1}{17}$ (d) $\frac{1}{19} \checkmark$

18- The contrapositive of $\sim p \rightarrow \sim q$ is:

(a) $p \rightarrow q$ (b) $q \rightarrow p \checkmark$
(c) $\sim q \rightarrow \sim p$ (d) $\sim q \rightarrow p$

19- From the identity $5x + 4 = A(x - 1) + B(x + 2)$, then value of B = :

(a) -3 (b) 3 ✓
(c) -2 (d) 2

20- If $A = \begin{bmatrix} 1 & 2 & -2 \\ 0 & 0 & 5 \\ 6 & 7 & 3 \end{bmatrix}$, then $A_{33} = :$

(a) -1 (b) 1
(c) 3 (d) 0 ✓